

Factors Affecting Architectural Design for Crime in Nigeria: Role of the Architect

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It has been acknowledged by researchers and practitioners of crime prevention that design is an important tool that could be used to prevent crime and reduce fear of crime while increasing sense of community. However, the architect faces several challenges in the attempt to address crime prevention issues in his design. This paper assessed the factors that hinder architects in Nigeria from addressing issues of crime prevention holistically in their designs. Survey research method was adopted for the study. 132 questionnaires were administered to architects in Akwa Ibom and Cross River States of Nigeria. 87 properly filled and returned questionnaires were used for the study. Percentages and mean score analysis and ranking method were used as the analysis tools. Interviews were also carried out with key architects with 12 to 37 years of practice experience. The result revealed the major hindrances to architectural design for crime prevention to include lack of documented examples and no crime prevention requirements in planning and building regulations in Nigeria among others. These factors are knowledge related. This suggests that knowledge has a significant and positive effect on architectural design for crime prevention as it helps architects to take good and informed design decisions. It notes that documented examples have three major functions namely, knowledge sharing, knowledge transfer and knowledge preservation. The paper concluded that these factors affect the ability of architects to design against crime because architectural design is knowledge dependent and knowledge driven. It recommended that physical security concepts and crime prevention through environmental design should be made part of formal architectural education training and/or professional continuing development programme in Nigeria.

KEYWORDS: Architectural design, crime, crime prevention, factors, security.

The global trend of population growth and rapid urbanisation has caused crime to become one of the most serious social problems as crime rates around the world continue to escalate (Marzbali et al., 2011). Crime creates fear (Stafford et al., 2007) which is further intensified by media attention focused on the issue. There is also the perception that law enforcement personnel alone cannot solve the problem as police are unresponsive in many cases or only respond after the crime has taken place. This has drawn attention to the need for partnerships to tackle the crime problem. Since crime takes place in the built environment citizens look up to architects also to design secure buildings. Creating an environment that is safe is one of the biggest challenges of the 21st century (Bercovich, 2010).

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Introduction



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Crime prevention involves the anticipation, recognition, acknowledgement and appraisal of a crime risk or threat and taking some actions to remove or reduce it (National Crime Prevention Institute, 1986). For crime to be committed the criminal must have a motivated desire; must be criminally skilful, must have the proper tools to commit the crime and must locate a target that provides the opportunity to commit the crime. The aim of crime prevention, therefore, is to protect the target by reducing and/or eliminating criminal opportunity. This is possible by making a potential target of attack unattractive, inaccessible, dangerous and unprofitable to the criminal. In other words, increase the risk and reduce the ease and reward factors. Crime prevention relies on the principles of deter, delay, detect and deny – the 4Ds of crime prevention (Fennelly, 1989; Crowe, 2000). Lee and Lee (2008) argue that the environment emits many signals and cues about the characteristics of the site, and criminals use these cues to locate and identify easy targets. Crime Prevention through Environmental Design (CPTED) could be used to manipulate the built environment to minimise opportunities for crime (Crowe and Fennelly, 2013). Some design outcomes in Nigeria increase instead of reducing the ease factor. Fig. 1 shows poorly planted trees that aided a person to climb over a fence thereby compromising security. The choice of trees (species and characteristics) and their proper locations were not taken into consideration at the design stage.

The crime problem in Nigeria is multi-dimensional. The problem ranges from simple burglary to militancy and their criminal activities of murder, kidnapping, bombing and destruction of property, arson and armed robbery. The immediate response has been to surround sensitive and other

public facilities with improvised barriers, intimidating guards, blocking of whole or parts of the roads around the facilities. Fig.2 shows the blocking off of part of the road in front of the Nigerian National Petroleum Corporation (NNPC) Towers, Abuja, Nigeria to public use to create the required stand-off distance. This has caused considerable inconvenience to vehicular movement. It could have been avoided if this was considered at the design stage.

This suggests that crime prevention (physical security) mechanisms are often considered as a retroactive add-on and implemented

Fig. 1

Poor planting can aid climbing over a fence using tree branch thereby compromising security



Fig. 2

Part of the road blocked to create required stand off distance at NNPC Towers complex, Abuja



after a crime has been committed rather than during the design development. These measures should have been considered at the design stage. Generally, in Nigeria crime prevention and security related issues are considered the concern of law enforcement and industrial security personnel and therefore are not holistically considered and integrated at the design and construction stages of project development of buildings. These responses and interventions show that there is a high priority placed on security and crime prevention by owners and users as a design consideration that architects should not sacrifice to achieve other design requirements. The responses also draw attention to the need to investigate why architects in Nigeria do not holistically address issues of crime prevention in their designs. The aim of this paper, therefore, is to determine the factors that affect architectural design for crime prevention in Nigeria. These factors analysed were drawn from the review of literature.

Designing should take a holistic approach in order to meet the challenges of crime and terrorism. Treating crime prevention as an after- thought after the construction has been completed is not cost effective. However, the architect faces several challenges in the attempt to address crime prevention issues in his design. R. I. Atlas (2013) identifies poor knowledge of crime prevention design principles and process, unavailability of building codes that enforce or encourage such designs, clients overlooking security issues in their brief to architects and poor collaboration with other professionals, especially security experts. Furthermore, other challenges to the architect as noted by R. I. Atlas (2013) include:

- Determining crime prevention requirements: crime prevention needs should be determined at the beginning of a project's programming and problem definition stage.
- Knowledge of security technology: the rapid advances and innovation in the technology of security systems make keeping up-to-date a challenge. Architects, as with other areas of specialisation, should be knowledgeable enough to be in a position to evaluate, specify and incorporate technical crime prevention mechanisms and equipment appropriately.
- Understanding architectural implications of crime prevention requirements: architectural design is expected to incorporate the complicated and sometimes conflicting goals of crime prevention and other project variables and requirements. Space should be designed to support the key crime prevention objectives of deter, detect, delay and deny access and rapid response to unauthorised access and criminal activities. The architect should translate these crime prevention concerns into design implications.

M. Press et al. (2001) consider collaboration and shared knowledge with client, manufacturers and crime prevention experts as a necessity since all could contribute to the design process. They argue that awareness and practical knowledge of crime resistant products among designers could encourage manufacturers to produce better products. They also point out the need to draw on the significant documented knowledge that exists on crime prevention for design. Furthermore, they identify little understanding of the issues of crime prevention, a lack of specific knowledge that can be applied in design, reconciling the often contradictory demands of design and security, complexity of design issues as they relate to crime and access to research data that is either unavailable or difficult to obtain. J. Warren (2010) asserts that the professionals' ability to make informed decisions on the probability of crime occurrence (type, how and where) in a building will reduce the likelihood of the event occurring though design and use of appropriate crime prevention mechanisms. Furthermore, the professional should be able to judge probability accurately when determining the best methods to reduce the likelihood of crime occurring in an area. V. Horayangkura (2012) also notes that incorporating environment-behaviour knowledge into the design process also poses a challenge to architects. These factors individually or collectively are likely to affect architectural design for crime prevention in Nigeria.

Factors affecting architectural design for crime prevention

Study area

The study area is located in Akwa Ibom and Cross River States in the south geo-political zone of Nigeria. Akwa Ibom State was created from Cross River state on 23 September, 1987. It lies between latitudes 4°33' and 5°33' North and longitudes 7°35' and 8°25' East. It is bounded on the north by Abia State, on the east by Cross River State, on the west by Abia and Rivers State and on the south by the Atlantic Ocean. The capital city is Uyo. Cross River State was created on 27 May, 1967 as South Eastern state. The name was changed to Cross River state in 1976. It is bounded on the north by Benue State, on the east by the Republic of Cameroun, on the west by Akwa Ibom, Abia Ebonyi and Enugu States and on the south by Akwa Ibom State and the Atlantic Ocean. It is located on the following co-ordinates: 4°57' North and 8°19' East. The capital city is Calabar.

Methodology and findings

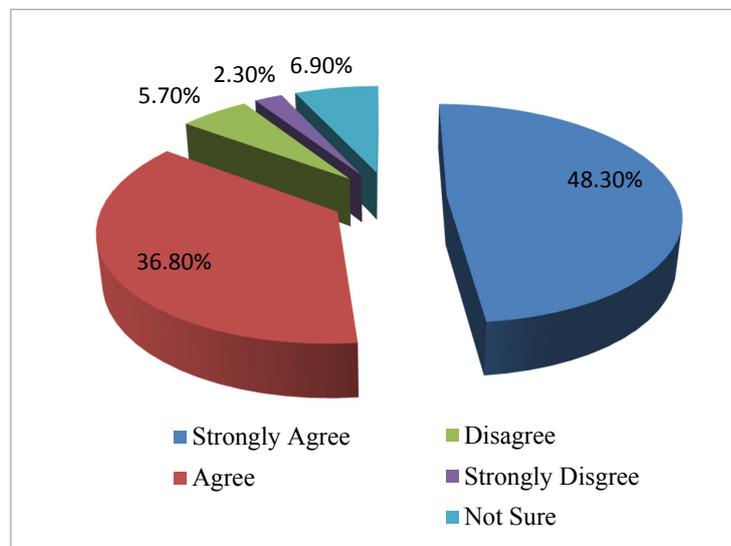
The survey research method was adopted for the study. 132 questionnaires were administered to members of the Nigerian Institute of Architects in Akwa Ibom and Cross River states of Nigeria. 93(70.45%) of the total number of questionnaire administered were completed and returned. Six (4.54%) incomplete questionnaires were rejected. 87 completed questionnaires, representing 65.91%, were used for the study. The achieved sample is not biased by non-response as non-responders do not differ in any significant way from the respondents. This is a homogeneous sample. Percentages and mean score analysis and ranking method were used as the analysis tools. Interviews were also carried out with key architects with 12 to 37 years of practice experience. Statistical Package for Social Sciences (SPSS) version 20 was the software used for data analysis.

The study sought to know if there is a role for architects in crime prevention and anti-terrorism practices in Nigeria. Likert scale was used to rate the respondents' responses as follows, strongly agree – 5, agree – 4, disagree – 3, strongly disagree – 2 and not sure – 1. The results are presented in Fig. 3.

This result indicates that majority of the respondents totalling 85.1% strongly agree or agree that architects have a role in crime prevention. This study also sought to know whether crime prevention and other security issues are specific client's request on the respondents' projects. For this the rating was based on a "yes" or "no". The result indicates that 56 respondents representing 64.4% indicated that crime prevention and other security issues are specific request of clients on their projects while 31 (35.6%) indicated that it is not. This result indicates that majority of the respondents have crime prevention and security as part of the client's brief and instruction.

Fig. 3

Descriptive Results of the Role of Architects in Crime Prevention



The major objective of the study was to determine the factors that prevent architects from addressing issues of crime prevention in their designs. Ten factors were selected from the review of literature. To achieve this objective, the respondents were requested to rate the effect of these factors on their ability to address the issues of crime prevention in their designs of public buildings. A five-point

Likert scale is used as follows; Very high – 5, High – 4, Moderate – 3, Low – 2 and No effect – 1. The responses are analysed using the mean score analysis and ranking method. S. C. Fan et al. (2010) adopted this method to determine the significant levels of critical factors for using group decision support systems in value management studies. Similarly, A. O. Odesola (2015) adopted this approach in assessing management-related factors affecting labour productivity in Cross River state of Nigeria. The ranking of variables was based on the mean scores of the responses. The scores and the subsequent ranking show what factors the respondents consider to affect architectural design for crime prevention more than others.

An evaluation scale in line with the measuring scale was adopted to establish a baseline or cut-off point. A baseline mean of 2.60 was used to determine the significance of the factors. The results are presented in Table 1. From Table 1 the mean values of the factors have been sorted out in a descending order. The highest mean value (3.32) represented by rank 1 represents the most significant factor as rated by the respondents which is lack of documented examples in Nigeria. This is followed by clients' brief not specific on crime prevention (3.17), no crime prevention requirements in planning and building regulations in Nigeria (3.05), inability to reconcile the demands of functions and aesthetics with security requirements (2.99, rank 4) and inability to estimate the probability of crime occurrence in proposed project (2.99, rank 5). Where the mean is the same value the factor with the lowest standard deviation was ranked higher.

Factors	N	Mean	Standard deviation	Rank
lack of documented examples in Nigeria	87	3.32	1.196	1
Client's brief not specific on crime prevention	87	3.17	1.014	2
No crime prevention requirements in planning and building regulations in Nigeria	87	3.05	1.120	3
Inability to reconcile the demands of functions and aesthetics with security requirements	87	2.99	1.006	4
Inability to estimate the probability of crime occurrence in proposed project	87	2.99	1.186	5
Inadequate knowledge of crime prevention design principles and processes	87	2.91	1.030	6
Inability to determine crime prevention requirements	87	2.91	1.085	7
Poor knowledge of crime prevention products and mechanisms	87	2.82	1.029	8
No training on design for crime prevention	87	2.82	1.385	9
Poor understanding of architectural implication of crime prevention requirements	87	2.74	1.146	10

N = Total number of respondents; Mid-point Value = 2.97

The findings on the role of architects in crime prevention in Fig. 3 shows that majority of the respondents (85.1%) strongly agree or agree that architects have a role in crime prevention. This implies that architects are becoming more and more involved in addressing social issues in their designs. This finding has three important implications namely, increase the relevance of architecture, expand its professional boundaries and bring about a proactive response to the issues of crime prevention. The implication becomes more obvious when viewed with the finding that majority of the clients (64.4%) specifically request that architects address issues of crime prevention and security in their projects. The clients' specific request on crime prevention could be attributed

Table 1

Ranks of factors that affect architectural design for crime prevention

Discussion of findings

to the fact that safety and security are serious social problems in Nigeria with crime ranking high among the risks. This finding also implies that there is the tendency that architects' knowledge of crime prevention design concepts and methodologies will increase since architects use clients' brief for the project to collect information relevant to the project. The architect as a designer and a businessman has to ensure that the client is satisfied with the design and has value for his money. This finding of clients' specific request on crime prevention draws attention to statement of Royal Institute of British Architects that the client's brief is the key driver or constraint for research activities for design. Furthermore, what is contained in the client's brief will determine to a very large extent what is contained in the design.

The results in **Table 1** show that all the factors are significant with mean values above the 2.6 baseline. These factors are knowledge related. For example, lack of documented examples in Nigeria relate to precedent and design knowledge, client's brief not specific on crime prevention (design knowledge), no crime prevention requirements in planning and building regulations in Nigeria (regulatory knowledge), inability to reconcile demands of function and aesthetics with security requirements (application knowledge) and inability to estimate the probability of crime occurrences in proposed project relates to environmental knowledge.

This suggests that knowledge has a significant and positive effect on architectural design for crime prevention. Knowledge helps architects to take good and informed design decisions. Different types of knowledge are needed to improve the impact of architectural design. These findings draw attention to the observation of A. M. Salama (2008) that there is a rise in demand for different types of knowledge in architecture. It also agrees with the statement of Royal Institute of British Architects that the value of specialist sector knowledge is increasingly being recognised. A very important factor affecting architectural design for crime prevention is 'lack of documented examples in Nigeria' ranked first. This finding echoes the need for Nigerian architects to document and publish their works in order to make precedent knowledge available to students and practitioners. Documented examples have three major functions namely, knowledge sharing, knowledge transfer and knowledge preservation. Documented materials are the main sources of knowledge for design. This implies that lack of documented examples is a serious problem in the architectural design for crime prevention in Nigeria.

This draws attention to the findings of N. C. Kayacetin and A. M. Tanyer (2009) that 73.3% of the architectural organisations they studied strongly agreed or agreed that documented examples are the main sources of knowledge for design. This agrees with Architect information provider number two (Interviewed 18th December, 2015) with 30 years of practice experience that "materials, books and documents available to Nigerian architects are mostly foreign which have to be adapted to local context. Documented works in Nigeria by Nigerian architects are scarce or not available in areas like crime prevention design. Architects in Nigeria should, therefore, be involved in documenting their works to produce design and project examples that reflect peculiar circumstances of their projects."

Conclusions and recommendations

The results of the study have drawn attention to the increase in the understanding of the important role of the architect in the current fight against crime and terrorism. This role is a product of the recognition of the fact that the environment can be manipulated through design to reduce and/or prevent criminal and terrorist acts and also mitigate the effect of such attacks. Using his experience and professional knowledge and in collaboration with other relevant professionals, the architect can contribute immensely to creating buildings and environments with built-in security measures. The significant factors affecting architectural design for crime

prevention draw attention to the need for architects in Nigeria to acquire relevant knowledge on the processes and requirements for crime prevention design in order to effectively address crime prevention issues in their designs. The paper concludes that these factors have major effects on the ability of Nigerian architects to design against crime because architectural design is knowledge dependent and knowledge driven. The paper recommends that architects in Nigeria should be trained in physical security concepts and crime prevention through environmental design as part of formal architectural education training and/or professional continuing development programme. The skills acquired will enable them to easily transform security goals and objectives into design requirements. Architects should also document their works and the processes involved in arriving at their final implemented designs, especially in the areas of security and crime prevention. These should include the problems, conflicts and trade-offs encountered in the process and how they were resolved.

Atlas, R. I. (2013). *21st Century Security and CPTED: Designing for Critical Infrastructure Protection and Crime Prevention*. Boca Raton: CRC Press. <https://doi.org/10.1201/b15046>

Bercovich, D. H. (2010). *The Fear Society: Design for Safety*. Retrieved from www.essays.se/about/Dana+Hakim+Bercovich

Crowe, T. D. (2000). *Crime Prevention through Environmental Design: Application of Architectural Design and Space Management Principles*. Boston: Butterworth-Heinemann.

Crowe, T. D. and Fennelly, L. J. (2013). *Crime Prevention through Environmental Design (3rd Ed.)*. New York: Elsevier.

Fan, S. C., Shen, Q. P., Luo, X. (2010). Group Decision Support Systems in Value Management. *Construction Management Economics*, 28(8), 827 – 838. <https://doi.org/10.1080/01446191003758171>

Fennelly, L. (1989). *Handbook of Loss Prevention and Crime Prevention*, 2nd Ed. Boston: Butterworth-Heinemann.

Horayangkura, V. (2012). Incorporating Environment-Behaviour Knowledge into the Design Process: An Elusive Challenge for Architects in the 21st Century. *Procedia – Social and Behavioral Sciences*, 50, 30 – 41. <https://doi.org/10.1016/j.sbspro.2012.08.013>

Kayacetin, N. C. and Tanyer, A. M. (2009). Exploring Knowledge Management in the Practice of Architecture: A Pilot Study in the Turkish Capital. *METU JFA*, 26(2), 279 – 308. <https://doi.org/10.4305/METU.JFA.2009.2.14>

Lee, K. Lee, J. (2008). *Cross-cultural Analysis of Perception of Environmental Characteristics in*

Target Selection Process for Residential Burglary. Crime Prevention and Community Safety Journal, 10, 19-35. <https://doi.org/10.1057/palgrave.cpcs.8150055>

Marzbali, M., Abdulla, A., Razak, N., Tilaki, M. (2011). A Review of Effectiveness of Crime Prevention by Design Approaches Towards Sustainable Development. *Journal of Sustainable Development*, 4(1), 160 – 172.

National Crime Prevention Institute (1986). *Understanding Crime Prevention*. Stoneham: Butterworth Publishers.

Odesola, A. O. (2015). Assessment of Management – Related Factors Affecting Construction Labour Productivity in Cross River state of Nigeria. *Covenant Journal of Research in the Built Environment*, 3(2), 13 – 29.

Press, M., Erol, R., Cooper, R. (2001). *Design as a Tool for Social Policy: The case for Design against Crime*. Paper presented at the Fourth European Academy of Design Conference, Aviero, Portugal.

Salama A. M. (2008) A Theory for Integrating Knowledge in Architectural Design Education. *Archnet-IJAR*, 2 (1), 100-128.

Stafford, M., Chandola, T., Marmot, M. (2007). Association between Fear of Crime and Mental Health and Physical Functioning. *Am J Public Health*, 97(11), 2076 – 2081. <https://doi.org/10.2105/AJPH.2006.097154>

Warren, J. (2010). *Construction of Meanings and Personal Identity in Decision Making of Community Safety Professionals*. PhD Thesis submitted to University of Chester.

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